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WHAT IS CLAIMED IS:

1. A method for recovering a compressed motion picture, comprising the steps of:

defining a cost function having a smoothing degree of an image and a reliability with respect to an original image in consideration of the directional characteristics of the pixels which will be recovered and a plurality of pixels near the recovering pixels;

obtaining a regularization parameter variable having a weight value of a reliability with respect to an original image based on the cost function; and

approximating the regularization parameter variable using the compressed pixel and obtaining a recovering pixel.

2. The method of claim 1, wherein said cost function includes another cost function for setting an interrelationship of a time region with respect to the recovering pixel when the pixel which will be recovered is in an inter macro block.

3. The method of claim 1, wherein said cost function includes another cost function which is defined based on a smoothing degree

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which is obtained by computing a difference between the recovering pixel and the neighboring pixel, a reliability of the original image obtained by computing a difference between the original image and the compressed image, and an interrelationship of a time region of the pixels of the block having a motion information.

4. The method of claim 1, wherein said plurality of neighboring pixels are the pixels which are neighboring in the upper, lower, left and right side directions of the recovering pixels.

5. The method of claim 1, wherein said regularization parameter variable is a weight value with respect to reliability and is determined based on a difference between the original pixel and the compressed pixel and a difference value between the original pixel and the neighboring pixel.

6. The method of claim 5, wherein said difference value between the original pixel and the compressed pixel is approximated based on a quantizing maximum difference, and a difference value between the original pixel and the neighboring pixel is approximated

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8. ~~9.~~ The method of claim 1, wherein said regularization parameter variable includes a weight value of a smoothing degree of the original image based on the cost function.

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9. ~~10.~~ The method of claim 8 ~~9~~, wherein when the pixels of the current macro block are the same as the pixels of the previously transmitted macro block, the recovered pixel values are substituted for the current pixel values with respect to the macro block of the previous image.

11. The method of claim 9, wherein in said step for approximating the regularization parameter variable, a quantizing difference of each pixel is set based on a function of a quantizing variable set by the unit of the macro block, and weight value is added to the pixel based on the position.

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12. In a method for recovering a compressed motion image for processing an original pixel f(i,j) based on a DCT by the unit of macro blocks of a MxM size, quantizing the DCT-processed coefficient, transmitting together with the motion vector information, reversely

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quantizing and reversely PCT-processing the compressed pixel g(i,j) and recovering an image similar to the original image, a method for recovering a compressed motion picture, comprising the steps of:

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defining a cost function M(i,j) having a smoothing degree of an image and a reliability with respect to an original image as a pixel unit in consideration with a directional characteristic between the recovering pixels and the pixels neighboring with the recovering pixels;

adaptively searching a regularization parameter variable α having a weight of a reliability with respect to the original image from the cost function M(i,j); and

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obtaining a projected pixel P(F(u,v)) using a projection method for mapping the recovering pixels in accordance with the range value of the pixels which will be recovered.

12. ~~13.~~ The method of claim ~~12,~~ 11 wherein said cost function M(i,j) is formed of a cost function $M_{HL}(f(i,j))$ which represents a smoothing degree and a reliability with respect to an original pixel f(i,j) and a left side neighboring pixel f(i,j−1), a cost function $M_{HR}(f(i,j))$ which represents a smoothing degree and a reliability with respect to the original pixel f(i,j)and a right side neighboring pixel f(i,j+1), a cost function $M_{VT}(f(i,j))$

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which represents a smoothing degree and a reliability with respect to the original pixel f(i,j) and an upper side neighboring pixel f(i-1,j), a cost function $M_{VD}(f(i,j))$ which represents a smoothing degree and a reliability with respect to the original pixel f(i,j) and a lower side neighboring pixel f(i+1,j), and a cost function $M_T(f(i,j))$ for setting an interrelationship of a time region with respect to the original pixel.

14. The method of claim 13, wherein each cost function is obtained like the following equations:

$$M_{HL}(f(i,j)) = [\ f(i,j) - f(i,j-1)\ ]^2 + \alpha_{HL}\ [\ g(i,j)-f(i,j)\ ]^2$$

$$M_{HR}(f(i,j)) = [\ f(i,j) - f(i,j+1)\ ]^2 + \alpha_{HR}\ [\ g(i,j)-f(i,j)\ ]^2$$

$$M_{VT}(f(i,j)) = [\ f(i,j) - f(i-1,j)\ ]^2 + \alpha_{VT}\ [\ g(i,j)-f(i,j)\ ]^2$$

$$M_{VD}(f(i,j)) = [\ f(i,j) - f(i+1,j)\ ]^2 + \alpha_{VD}\ [\ g(i,j)-f(i,j)\ ]^2$$

$$M_T(f(i,j)) = [\ f(i,j) - f_{MC}(i,j)\ ]^2 + \alpha_T\ [\ g(i,j)-f(i,j)\ ]^2$$

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where $f_{MC}(i,j)$ represents a motion compensated pixel, α_{HL}, α_{HR}, α_{VT}, α_{VD} and α_T represent a regularization parameter variable with respect to each cost function.

15. The method of claim 14, wherein the pixels f(i,j) which will be recovered is obtained based on the following equation when the pixel

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is included in the inter macro block,

$$f(i,j) = \frac{f(i,j-1) + f(i,j+1) + f(i-1,j) + f(i+1,j) + f_{MC}(i,j) + \alpha_{TOT}g(i,j)}{5 + \alpha_{TOT}}$$

where, $\alpha_{TOT} = \alpha_{HL} + \alpha_{HR} + \alpha_{VT} + \alpha_{VD} + \alpha_T$, and

the pixels f(i,j) which will be recovered is obtained based on the following equation when the pixel is included in the intra macro block,

$$f(i,j) = \frac{f(i,j-1) + f(i,j+1) + f(i-1,j) + f(i+1,j) + \alpha_{TOT}g(i,j)}{4 + \alpha_{TOT}}$$

where $\alpha_{TOT} = \alpha_{HL} + \alpha_{HR} + \alpha_{VT} + \alpha_{VD}$.

15. ~~16.~~ The method of claim 13 ~~14~~, wherein said regularization parameter variables α_{HL}, α_{HR}, α_{VT}, α_{VD}, α_T are obtained by approximations as follows:

$$\alpha_{HL} = \frac{[g(i,j) - g(i,j-1)]^2}{Q_{pl}^2}, \quad \alpha_{HR} = \frac{[g(i,j) - g(i,j+1)]^2}{Q_{pl}^2}$$

$$\alpha_{VT} = \frac{[g(i,j) - g(i-1,j)]^2}{Q_{pl}^2}, \quad \alpha_{VD} = \frac{[g(i,j) - g(i+1,j)]^2}{Q_{pl}^2}$$

$$\alpha_T = \frac{[g(i,j) - f_{MC}(i,j)]^2}{Q_{pl}^2}$$

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where Q_{pl} represents a quantizing variable of the l-th macro block.

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in consideration with a directional characteristic between the recovering pixels and the pixels neighboring with the recovering pixels; and

adaptively searching a regularization parameter variable α having a weight of a reliability with respect to the original image from the cost function M(i,j) and a weight value of a smoothing degree of the original image.

21. ~~23.~~ The method of claim 21 ~~22~~, wherein said cost function is obtained based on the following equations:

$$M_L(f(i,j)) = \alpha_L(f(i,j))[f(i,j) - f(i,j-1)]^2 + (1-\alpha_L(f(i,j)))[g(i,j)-f(i,j)]^2$$

$$M_R(f(i,j)) = \alpha_R(f(i,j))[f(i,j) - f(i,j+1)]^2 + (1-\alpha_R(f(i,j)))[g(i,j)-f(i,j)]^2$$

$$M_U(f(i,j)) = \alpha_U(f(i,j))[f(i,j) - f(i-1,j)]^2 + (1-\alpha_U(f(i,j)))[g(i,j)-f(i,j)]^2$$

$$M_D(f(i,j)) = \alpha_D(f(i,j))[f(i,j) - f(i+1,j)]^2 + (1-\alpha_D(f(i,j)))[g(i,j)-f(i,j)]^2$$

where α_L, α_R, α_U , α_D are regularization parameter variables with respect to each cost function.

23. ~~24.~~ The method of claim 22 ~~23~~, wherein when the pixel of the current macro block is the same as the pixel of the previously transmitted macro block, in said pixel f(i,j) which will be recovered, the pixel value which is previously recovered with respect to the macro block

of the previous image is substituted for the current pixel value, and otherwise the following Equation is obtained:

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$$f(i,j) = \frac{\alpha_L f(i,j-1) + \alpha_R f(i,j+1) + \alpha_U f(i-1,j) + \alpha_D f(i+1,j) + (4-\alpha_{TOT}) g(i,j)}{4}$$

where $\alpha_{TOT} = \alpha_L + \alpha_R + \alpha_U + \alpha_D$.

24. ~~25.~~ The method of claim 22 ~~23,~~ wherein said regularization parameter variables α_L, α_R, α_U, α_D are approximated as follows:

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$$\alpha_L = \frac{K_L Q_P^2}{[g(i,j) - g(i,j-1)]^2 + K_L Q_P^2}$$

$$\alpha_R = \frac{K_R Q_P^2}{[g(i,j) - g(i,j+1)]^2 + K_R Q_P^2}$$

$$\alpha_U = \frac{K_U Q_P^2}{[g(i,j) - g(i-1,j)]^2 + K_U Q_P^2}$$

$$\alpha_D = \frac{K_D Q_P^2}{[g(i,j) - g(i+1,j)]^2 + K_D Q_P^2}$$

where $K_L Qp^2$, $K_R Qp^2$, $K_U Qp^2$, $K_D Qp^2$ are functions of the quantizing variable Qp, and constants K_L, K_R, K_U, K_D are weight values with respect to the regularization parameter variables α_L, α_R, α_U, α_D, and have different values based on whether the neighboring pixel is positioned at the block boundary or in the interior of the block.

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25. ~~26.~~ The method of claim ~~25~~ 24, wherein the weight values K_L, K_R, K_U, K_D are expressed as follows, assuming that i and j of the pixel f(i,j) are 8, respectively,

K_L = {9, if j mod 8 = 0; 1, otherwise }

K_R = {9, if j mod 8 = 7; 1, otherwise }

K_U = {9, if i mod 8 = 0; 1, otherwise }

K_D = {9, if i mod 8 = 7; 1, otherwise }.

27. A method for recovering a compressed motion picture which is implemented by:

an image decoding unit for outputting an information with respect to a recovering image such as a decoded image, a qnautized variable, a macro block type, and a motion type by decoding a coded image signal; and

a block process eliminating filter for defining a cost function based on a smoothing degree of an image and a reliability with respect to an original pixel in consideration with a directional characteristic between the neighboring pixel and the pixel which will be processed based on trhe pixels which will be recovered using an information with respect to the recovering image inputted from the image decoding unit, and adaptively

based on a difference value between the compressed pixel and the neighboring compressed pixel.

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7. The method of claim 1, after the step for obtaining a recovering pixel, further comprising a step for performing a DCT with respect to the recovering pixels, projecting the recovering pixels in accordance with pixel value which will be processed and performing a reverse DCT with respect to the projected images, and in said projecting step, a recovering image is projected at a subset for setting a range of DCT coefficients of a compressed image, and a maximum quantizing difference of the macro block is included in the subset.

8. The method of claim 1, wherein in said step for approximating the regularization parameter variable, a quantizing maximum difference of the macro block unit is a quantizing variable, a quantizing difference is uniformly allocated to each pixel in a corresponding macro block, and the non-uniform values between two pixels of the original image are statistically similar to the non-uniform values between two pixels of the original image.

17. The method of claim 12, wherein in said step for obtaining the projected pixels $P(F(u,v))$, when (u,v)-th value $F(u,v)$ of two-dimensional DCT coefficient of the original image is smaller than $G(u,v)-Qpl$, *the projected pixel* $P(F(u,v))$ *is mapped to* $G(u,v) - Qpl$, *and when the value* $F(u,v)$ is larger than $G(u,v)+Qpl$, *the projected pixel* $P(F(u,v))$ *is mapped to* $G(u,v) + Qpl$, *otherwise, the projected pixel* $P(F(u,v))$ *is mapped to* $F(u,v)$, *where* $G(u,v)$ *represents* (u,v)*th value of the two-dimensional DCT coefficient of the compression image, and* Qpl *represents a quantizing maximum difference of the* l*-th macro block.*

18. The method of claim 12, wherein the following step is repeatedly performed by k-times, which step includes the steps of:

defining a cost function $M(i,j)$ having a smoothing degree of an image and a reliability with respect to the original image by the unit of pixels in consideration with a directional characteristic between the pixels which will be recovered and the pixels neighboring the pixels which will be recovered;

adaptively searching a regularization parameter variable α having a weight value of a reliability with respect to the original image from the cost function $M(i,j)$; and

obtaining a projected pixel P(F(u,v) using a projection method for mapping the recovering pixel in accordance with a range value of the pixel which will be recovered, for thereby finally obtaining a recovering image.

19. In a method for recovering a compressed motion image for processing an original pixel f(i,j) based on a DCT by the unit of macro blocks of a MxM size, quantizing the DCT-processed coefficient, transmitting together with the motion vector information, reversely quantizing and reversely PCT-processing the compressed pixel g(i,j) and recovering an image similar to the original image, a method for recovering a compressed motion picture, comprising the steps of:

defining a cost function M(i,j) having a smoothing degree of an image and a reliability with respect to an original image as a pixel unit in consideration with a directional characteristic between the recovering pixels and the pixels neighboring with the recovering pixels;

adaptively searching a regularization parameter variable α having a weight of a reliability with respect to the original image from the cost function M(i,j); and

obtaining a finally recovered image of a spacious region by obtaining

a block DCT coefficient based on a block DCT and obtaining a projected pixel P(F(u,v)) by a projection method for mapping the recovering pixels in a range value of the pixel for processing the block DCT coefficient, and performing a reverse DCT .

20. A method for recovering a compressed motion picture which is implemented by:

an image decoding unit for outputting an information with respect to a recovering image such as a decoded image, a qnautized variable, a macro block type, and a motion type by decoding a coded image signal; and

a block process eliminating filter for defining a cost function based on a smoothing degree of an image and a reliability with respect to an original pixel in consideration with a directional characteristic between the neighboring pixel and the pixel which will be processed based on the pixels which will be recovered using an information with respect to the recovering image inputted from the image decoding unit, adaptively searching a regularization parameter variable which provides a weight of a reliability with respect to the original image for each cost function, and recovering an original pixel using a projection method for mapping the

recovering pixels in accordance with a range value of the pixels which will be processed.

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21. The method of claim 20, further comprising:

a DCT unit for performing a DCT with respect to an image recovered by a block process eliminating filter;

a vector projection unit for projecting a recovering pixel in accordance with a pixel value after the DCT process is performed; and

an IDCT unit for performing a reverse DCT with respect to the image projected by the vector projection unit.

22. In a method for recovering a compressed motion image for processing an original pixel f(i,j) based on a DCT by the unit of macro blocks of a MxM size, quantizing the DCT-processed coefficient, transmitting together with the motion vector information, reversely quantizing and reversely PCT-processing the compressed pixel g(i,j) and recovering an image similar to the original image, a method for recovering a compressed motion picture, comprising the steps of:

defining a cost function M(i,j) having a smoothing degree of an image and a reliability with respect to an original image as a pixel unit

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searching a regularization parameter variable which has a weight of a reliability with respect to the original image from each cost function and a weight of a smoothing degree of the original image for thereby recovering an original pixel.